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could be done most economically by the use of horses. "Animal power is to-day our chief reliance in saving labor on farms, and so far as we can judge always will be. The more effective utilization of animal motive power units, and the application of labor saving methods therewith, should therefore receive especial consideration from our colleges, experiment stations and agricultural engineers."

The increasing of labor efficiency on the farm through the use of animal power involves the study of four leading factors: namely, the use of a greater number of horses per man; the application of more efficient methods in the use of animal power; the employment of more efficient types of horses; and the devising of new applications in utilizing animal power. It is worth while to note that the light two-horse teams used in New England plow scarcely more than one acre per day. In Pennsylvania and Ohio three-horse teams are often used and the acreage plowed by them will average two to two and a half per day. In Iowa and Illinois most farmers use four and five horse teams and plow four and a half to five acres per day; while in the PaLouse Country in Oregon, Washington and Idaho eight and ten horse teams are common and their performance is equivalent to eight to eight and a half acres per day. "To put the matter in another way, the men in the West were doing their work with half as much labor as Illinois' farmers and one eighth as much labor as New England farmers."

Dean Potter referred in his remarks to the part played by large scale production methods in the development of the American industries. These methods are, however, possible only where mechanical power and devices operated by mechanical power are available. In the use of horse power one man can control at most five or six power units, whereas in the use of mechanical power he can control many more units. A questionnaire sent out to Kansas farmers disclosed many interesting facts as to the cost of operation, depreciation, efficiency of smaller and larger tractors, etc.

Considerable stress was laid by Mr. Lee on the opportunities that exist for using on the farm small electric motors of one half to three quarter horse power. Numerous tasks in the farm outbuildings and in the farm home could be performed by means of such motors, as for instance the operation of cream separators, sewing machines, pumps, vacuum cleaners, clippers, etc. Mr. Lee also referred to the need for investigation and training as bearing on the more effective use of

labor-saving devices in the farm home, as well as in the outbuildings and on the land.

The last topic on the program, "Future Needs and Developments," was discussed by Mr. E. A. White, of the Holt Manufacturing Company, Peoria, Ill. Mr. White estimated that there are in use on the farms of the United States about 30 million horse power units made up of 16 million animal units, 5 million gasoline and kerosene tractor units, 4 million steam engine units and more than 3 million windmill and electric motor units. On the other hand, the manufacturing establishments of the United States control only about 18½ millions of mechanical horse power units. If nothing else, the magnitude of the agricultural industry demands the expansion in the use of animal and mechanical power where this would be warranted by economic conditions. It also demands a more intimate knowledge of the need for power, the efficient use of power and the improvement in the devices employed, as well as the training of the human agents to whom, in the last analysis, we must look for the effective use of both power and machinery.

At the business meeting Dr. E. W. Allen, chief of the Office of Experiment Stations, was nominated vice-president. The General Committee of the Association later confirmed this nomination. The other officers for the ensuing year are: Dr. A. F. Woods, retiring vice-president; Dr. A. C. True, member of council; Mr. George M. Rommel, member of general committee; Sectional Committee, Dr. C. P. Gillette (four years); Dr. John Lee Coulter (three years); Dr. A. F. Woods (two years); Dean Alfred Vivian (one year); Dr. Kenyon L. Butterfield (one year); Dr. J. G. Lipman, secretary (four years).

JACOB G. LIPMAN,
Secretary

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